

ALGORITHM FOR MODELING THE COGNITIVE FUNCTION OF THE EMOTIONAL ASSESSMENT OF SITUATIONS BASED ON THE TRAINING OF MULTI-AGENT NEUROCOGNITIVE ARCHITECTURES

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To create a common artificial intelligence, it is necessary to create an apparatus of cognitive function of emotional assessment, which would be a driving force that can initiate, direct and regulate the system. The paper presents an algorithm for modeling the cognitive function of emotional assessment of situations based on the training of multi-agent neurocognitive architectures. A negative emotional assessment of the starting situation mobilizes the system to find the optimal solution to achieve the result, i.e. the desired situation will be formulated in order to avoid getting into a similar situation the next time, which will lead to training by changing knowledge in the conditional part and contractual relations between agents in the cognitive blocks of multi-agent architecture. A positive assessment is accompanied by increased "release" of additional energy to the agents, which leads to the strengthening of ties in the form of contracts that were concluded to achieve the goal in the cognitive blocks of multi-agent architecture.

Keywords: multiagent system, neurocognitive architecture, emotions, intellectual system, cognitive functions.

REFERENCES

1. Koziol L.F., Budding D.E. Subcortical Structures and Cognition. Implications for Neuropsychological Assessment. Springer, 2009.
2. Alexandrov Yu.I. (ed.). *Osnovy psikhofiziologii* [Fundamentals of Psychophysiology]. M.: InfraM, 1998.
3. Deacon T.W. The Symbolic Species: The Co-Evolution of Language and the Brain. N.Y.: Norton, 1997.
4. Shumsky S.A. *Modelirovaniye protsessa obucheniya yazyku* [Modeling the process of language learning] // Transactions conf. "Nonlinear dynamics in cognitive research", N. Novgorod, 2013. P. 202-203.
5. Bianki V.L. Parallel and sequential information processing in animals as a function of different hemispheres // Neuroscience and Behavioral Physiology. 1984. V. 14 (№6). Pp. 497-501.
6. Goldberg E. *Paradoks mudrosti* [The Paradox of Wisdom]. M.: URSS, 2005. P. 380.
7. Eagleman D. *Mozg: vasha lichnaya istoriya* [Brain: Your personal story]. 2016. P. 270.
8. Shamis A.S. *Puti modelirovaniya myshleniya* [Ways of modeling thinking]. M.: KomKniga, 2006. 224 p.
9. Yakhno V.G. *Problemy na puti konstruirovaniya simulyatora zhivyykh sistem* [Problems on the way of designing a simulator of live research]. N. Novgorod, 2011. Pp. 246-249.
10. Samsonovich A. Emotional biologically inspired cognitive architecture // Biologically Inspired Cognitive Architectures. 2013. V. 6. Pp. 109-125.

11. Rabinovich M.I., Muesinglu M.K. *Nelineynaya dinamika mozga: emotsii i intellektual'naya deyatel'nost'* [Nonlinear dynamics of the brain: emotions and intellectual activity] // UFN. 180 (4). Pp. 371-387.

12. Chernavsky D.S. *Sinergetika i informatsiya: dinamicheskaya teoriya informatsii* [Synergetics and Information: A Dynamic Information Theory]. M.: URSS, 2004. 287 p.

13. Chernavskaya O.D., Chernavskii D.S., Karp V.P., Nikitin A.P., Shchepetov D.S. An architecture of thinking system within the Dynamical Theory of Information // Biologically Inspired Cognitive Architecture (BICA), 2013. V. 6. Pp. 147-158.

14. Nagoev Z.V. *Intellekt ili myshleniye v zhivyykh i iskusstvennykh sistemakh* [Intellect, or thinking in living and artificial systems]. Publishing House KBNTS RAS. Nalchik, 2013. 211 p.

15. Nagoev Z.V. Multiagent recursive cognitive architecture // Biologically Inspired Cognitive Architectures 2012, Proceedings of the third annual meeting of the BICA Society, in Advances in Intelligent Systems and Computing series, Springer, 2012. Pp. 247-248.

16. Zalimkhan Nagoev, Olga Nagoeva, Inna Pshenokova, Irina Gurtueva Multi-agent Model of Semantics of Simple Extended Sentences Describing Static Scenes // Interactive Collaborative Robotics. 4th International Conference Proceedings, ICR 2019. Lecture Notes in Artificial Intelligence. Vol. 11659. Pp. 245-259.

17. Zalimkhan Nagoev, Inna Pshenokova, Irina Gurtueva, and Kantemir Bzhikhatlov A Simulation Model for the Cognitive Function of Static Objects Recognition Based on Machine-Learning Multi-agent Architectures // Biologically Inspired Cognitive Architectures 2019. Proceedings of the Tenth Annual Meeting of the BICA Society. Advances in Intelligent Systems and Computing. Vol. 948. Pp. 370-379.

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